

## Features

## Unregulated Converters

Rev. 1

- EN 60950 certified, rated for 250VAC
- UL-60950-1 / CSA C22.2 certified
- 5.2kVDC Isolation for 1 Minute
- Optional Continuous Short Circuit Protected
- Wide Operating Temperature Range at full 2 Watts Load, -40°C to +85°C
- Twin Chamber Transformer System
- UL94V-0 Package Material
- Efficiency to 80 %

## Description

The RxxP2xxS\_D Series of DC/DC Converters are fully certified to EN 60950/ UL-60950-1 and CSA C22.2. This makes them ideal for all telecom and safety applications where approved isolation is required.

## Selection Guide

| Part Number | Input Voltage (VDC) | Output Voltage (VDC) | Output Current (mA) | Efficiency (%) |
|-------------|---------------------|----------------------|---------------------|----------------|
| RxxP23.3S   | 5, 12, 15, 24       | 3.3                  | 600                 | 70             |
| RxxP205S    | 5, 12, 15, 24       | 5                    | 400                 | 70-75          |
| RxxP209S    | 5, 12, 15, 24       | 9                    | 222                 | 70-75          |
| RxxP212S    | 5, 12, 15, 24       | 12                   | 167                 | 70-75          |
| RxxP215S    | 5, 12, 15, 24       | 15                   | 132                 | 75-80          |
| RxxP23.3D   | 5, 12, 15, 24       | ±3.3                 | ±300                | 70             |
| RxxP205D    | 5, 12, 15, 24       | ±5                   | ±200                | 70-75          |
| RxxP209D    | 5, 12, 15, 24       | ±9                   | ±111                | 70-75          |
| RxxP212D    | 5, 12, 15, 24       | ±12                  | ±85                 | 70-75          |
| RxxP215D    | 5, 12, 15, 24       | ±15                  | ±66                 | 75-80          |

xx = Input Voltage. Other input and output voltage combinations available on request.

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. R05P205S/P, R05P205D/P

## Specifications (measured at T<sub>A</sub> = 25°C, nominal input voltage, full load and after warm-up)

|   |   |                     |              |                                      |
|---|---|---------------------|--------------|--------------------------------------|
| Input Voltage Range                               |   |                     |              | ±10%                                 |
| Output Voltage Accuracy                           |   |                     |              | ±5%                                  |
| Line Voltage Regulation                           |   |                     |              | 1.2%/1% of Vin typ.                  |
| Load Voltage Regulation (10% to 100% full load)   | 3.3, 5V output types  |                     |              | 15% max.                             |
|   | other output types  |                     |              | 10% max.                             |
| Output Ripple and Noise (20MHz BW)                |   |                     |              | 200mVp-p max.                        |
| Operating Frequency                               |   |                     |              | 20kHz min. / 50kHz typ. / 85kHz max. |
| Efficiency at Full Load                           |   |                     |              | 65% min. / 80% max.                  |
| No Load Power Consumption (see Note)              |   |                     |              | 148mW min. / 450mW max.              |
| Isolation Voltage                                 | (tested for 1 minute)                                       |                     |              | 5200VDC min.                         |
| Rated Working Voltage                             | (long term isolation)                                       |                     |              | see Application Notes                |
| Isolation Capacitance                             |   |                     |              | 1.5pF min. / 10pF max.               |
| Isolation Resistance                              |   |                     |              | 15 GΩ min.                           |
| Short Circuit Protection                          |   |                     |              | 1 Second                             |
| P-Suffix  |   |                     |              | Continuous                           |
| Operating Temperature Range (free air convection) |   |                     |              | -40°C to +85°C (see Graph)           |
| Storage Temperature Range                         |   |                     |              | -55°C to +125°C                      |
| Relative Humidity                                 |   |                     |              | 95% RH                               |
| Package Weight                                    |   |                     |              | 4.3g                                 |
| MTBF (+25°C)                                      | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F | Single types | 2113 x 10 <sup>3</sup> hours         |
|   |   |                     | Dual types   | 2434 x 10 <sup>3</sup> hours         |
| (+85°C)   |   | using MIL-HDBK 217F | Single types | 299 x 10 <sup>3</sup> hours          |
|   |   |                     | Dual types   | 334 x 10 <sup>3</sup> hours          |

## ECONOLINE

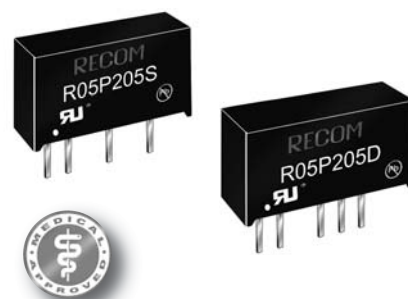
DC/DC-Converter

# RxxP2xx S\_D Series

2 Watt

SIP 7

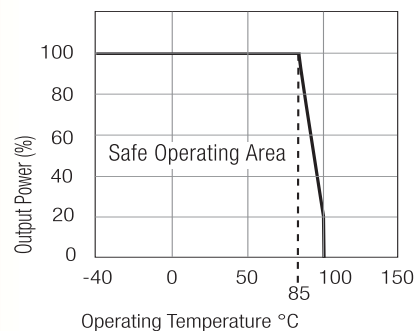
Single & Dual  
Output



EN-60950-1 Certified  
UL-60950-1 Pending  
EN-60601-1 Certified

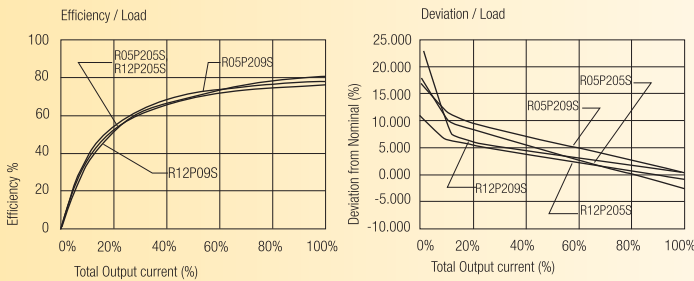
RECOM

## Derating-Graph (Ambient Temperature)

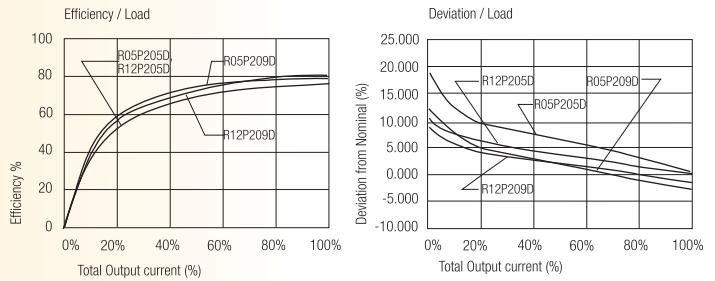


**Typical Characteristics, Tolerance Envelope**

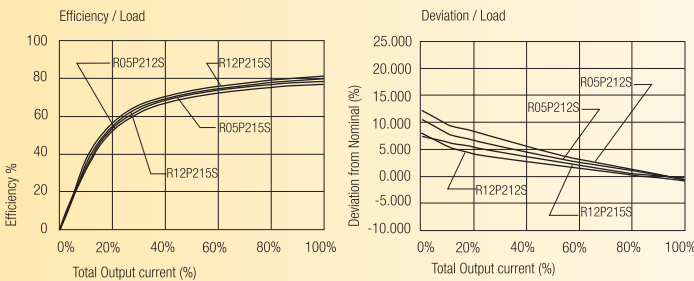
## RxxP205/09S



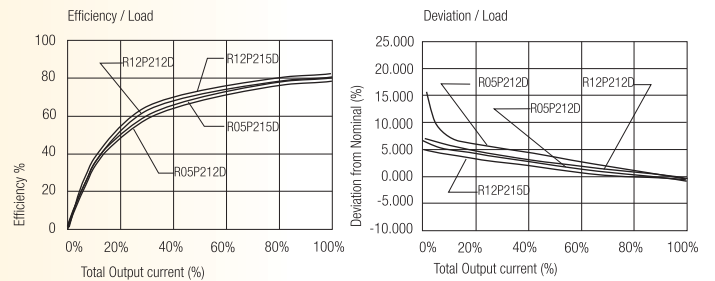
## RxxP205/09D



## RxxP212/15S

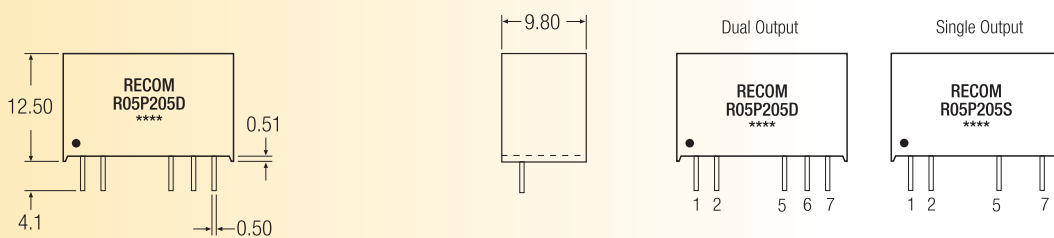


## RxxP212/15D

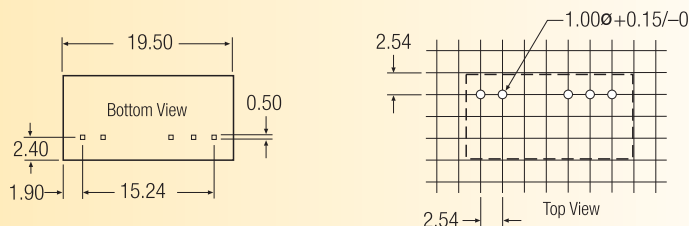


**Package Style and Pinning (mm)**

**7 PIN SIP Package**



**Recommended Footprint Details**



**Pin Connections**

| Pin # | Single | Dual  |
|-------|--------|-------|
| 1     | +Vin   | +Vin  |
| 2     | -Vin   | -Vin  |
| 5     | -Vout  | -Vout |
| 6     | No Pin | Com   |
| 7     | +Vout  | +Vout |

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm

**Note: No Load Power Consumption (including /P Options):**

|           |                         |
|-----------|-------------------------|
| Vin = 5V  | 345mW typ. / 450mW max. |
| Vin = 12V | 310mW typ. / 450mW max. |
| Vin = 15V | 290mW typ. / 450mW max. |
| Vin = 24V | 320mW typ. / 450mW max. |